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ABSTRACT

This manual describes the theory behind the Learning Process Questionnaire (LPQ) used in Australia and defines what the subscale and scale scores mean. The LPQ is a 36-item self-report questionnaire that yields scores on three basic motives for learning and three learning strategies, and on the approaches to learning that are formed by these motives and strategies. School learning is affected by personal factors--those belonging to the student, situational factors, and process factors; the students' motives for learning; and their accompanying strategies. The student's approach to learning is a composite of a motive and an appropriate strategy. Three approaches to learning are: (1) surface--the minimal meeting of requirements; (2) deep--intrinsic interest in what is being learned; and (3) achieving--to enhance ago and self-esteem to obtain the highest grades. These three approaches are fairly consistent orientations and can be measured by the LPQ. There are separate norms for males and females at age 14 years and at year 11 of schooling. Directions for administering, scoring, and interpreting LPQ scores are given, with suggestions about how they may be used by teachers and counselors. Statistical information about the LPQ's reliability and validity, four data tables, six figures, and eight tables of norms are also provided. The LPQ is enclosed. (SLD)

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STUDENT APPROACHES TO LEARNING & STUDYING

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Learning Process Questionnaire MANUAL

John Biggs

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Student Approaches to Learning and Studying

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Australian Council for Educational Research
Melbourne 1987

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Introduction

Those who are professionally involved in the learning processes of students, as teacher, counsellor or researcher, make certain assumptions about the nature of learning. Those assumptions then guide practice. For example, teachers make assumptions about how material might be presented, how students may be motivated, how students themselves go about learning, and how learning should best be evaluated. Counsellors make assumptions about the individual case, where a student's motivation, or strategies of learning, have been inadequate. Researchers test the assumptions of all: of teachers and counsellors, in order to advance practice, and of other researchers in order to advance theory.

There are many factors involved both in good student learning, and in failure. In this manual, the focus is on students' *approaches* to learning. The Learning Process Questionnaire (referred to as LPQ from now on) is designed to assess the extent to which a secondary school student endorses different approaches to learning and the more important motives and strategies comprising those approaches.

The LPQ is a 36 item, self-report questionnaire that yields scores on three basic motives for learning and three learning strategies, and on the approaches to learning that are formed by these motives and strategies. Norms are provided separately for males and females at two age levels: Age 14, to cover the middle secondary range, and Year 11 to cover the senior range. It is thus possible to compare a given student's score against carefully drawn national samples in order to see how that student compares to a 'typical' student of that age and sex.

This manual describes the theory behind the LPQ, and what the subscale and scale scores mean. Directions for administering, scoring, and interpreting scores are given, with suggestions as to how they may be used by teachers and counsellors. Statistical information concerning reliability and validity, and the tables of norms by age and sex, are also provided.

Students' Approaches to Learning

A complete account of the development of the LPQ (and its tertiary counterpart, the SPQ), and its rationale, is given in the writer's *Student Approaches to Learning and Studying.*† Here a brief summary of the theory is given, so that practitioners may have some idea about why the scales and subscales were produced, and to which aspects of student performance they relate.

Three sets of factors may be distinguished in school learning.

Presage Factors

Presage factors refer to those that are independent of the learning situation in question, and include *Personal* factors (those belonging to the student, such as IQ, home background, personality characteristics); and *Situational* factors (those belonging to the situational context, such as the subject content, the methods of teaching and of evaluation, the time available for learning, etc.). Presage factors may affect the student's performance directly, or indirectly, through their influence on Process factors (below).

Process Factors

Process factors determine the way the student goes about learning. Basically, we are talking about students' *motives* for learning and their accompanying *strategies*. The student's *approach* to learning is a composite of a motive and an appropriate strategy. For instance, students who are intrinsically motivated tend to extract most meaning from their learning: they read widely, relating new content to what they already know. Students who are motivated to achieve highest grades are likely to organize their work. Students who are learning in order to get by with minimal trouble, or simply to pass their

† Published by ACER (1987).

subjects without aiming high, are likely to focus on the bare essentials and rote learn them.

In listing these three scenarios, we have described in barest outline the three important approaches to learning: *deep*, *achieving*, and *surface*.

The LPQ operationalizes these approaches, and their constituent motives and strategies, in terms of scale and subscale profiles. These profiles represent an individual's *general orientation* to learning: that is, a composite of motivational states and strategy deployment that is relatively consistent over situations.

Table 1 gives a fuller description of the three main approaches and their constituent motives and strategies.

The following points should be noted.

1 Surface and deep strategies describe ways in which students engage the actual task itself, while the achieving strategy describes the ways in which students organize the temporal and spatial contexts in which the task is carried out. It is therefore possible for students to combine an achieving approach with either a surface, or a deep, approach. That is, a student may see the way to obtain top marks as consisting of selectively rote learning in an organized and systematic way; or more usually, of reading widely and seeking meaning in an organized and systematic way. The latter composite approach, called *deep-achieving*, is quite powerful and is characteristic of many successful students.

Table 1 Motive and Strategy in approaches to learning and studying

Approach	Motive	Strategy
SA: *Surface*	Surface motive (SM) is to meet requirements minimally; a balancing act between failing and working more than is necessary.	Surface strategy (SS) is to limit target to bare essentials and reproduce them through rote learning.
DA: *Deep*	Deep motive (DM) is intrinsic interest in what is being learned; to develop competence in particular academic subjects.	Deep strategy (DS) is to discover meaning by reading widely, inter-relating with previous relevant knowledge, etc.
AA: *Achieving*	Achieving motive (AM) is to enhance ego and self-esteem through competition; to obtain highest grades, whether or not material is interesting.	Achieving strategy (AS) is to organize one's time and working space; to follow up all suggested readings, schedule time, behave as 'model student'.

2 The three approaches lead to different kinds of learning outcome. The surface approach leads to retention of factual detail at the expense of the structural relationships inherent in the data to be learned, while emotional or affective outcomes are feelings of dissatisfaction, boredom, or outright dislike. The deep approach leads to an understanding of the structural complexity of the task and to positive feelings about it. The achieving approach, particularly in combination with deep, leads to good performance in examinations, a good academic self-concept, and to feelings of satisfaction. In the long term, it has been found that those students who predominantly use a surface approach at Age 14 plan to terminate their formal education as soon as they can, while those who predominantly use deep and/or achieving approaches say they intend to continue at least until the end of Year 12, and in many cases to obtain a tertiary qualification. The composite deep-achieving approach is that most associated with the attributes of formal education.

3 These approaches describe fairly consistent orientations, or learning styles, displayed by students, and they may persist over reasonable periods of time. For instance, measures taken in Term 2 in Year 11 have been shown to relate to HSC performance at the end of Year 12. Nevertheless, situational elements also play their part, so that a student's approach can be strongly influenced by immediate situational factors.

4 Learning approaches, especially deep and achieving, are most effective when students are *consciously aware* of their own learning processes and try deliberately to control them. In this important process, called 'metalearning', students adopt those strategies that are congruent with their motives: if they are curious (deep motive) they will want to find out and understand all that they can about it (deep strategy); if they want to achieve top marks (achieving motive) they will organize their approach accordingly; study according to a schedule, hand assignments in on time, etc. (achieving strategy).

Performance

Performance may be measured in a variety of ways, but underlying all of them are two broad dimensions, cognitive and affective.

1 *Structure–Fact (S–F) Ratio*

Student performance may be assessed in terms of the correct reproduction of specific factors or details. Sometimes this is appropriate and important: for example, in foreign language learning it is important to reproduce accurately script, sounds, and vocabulary, and in science and mathematics, to reproduce names and formulae. Performance may also be assessed in terms of the extent to which the structure in which the detail is embedded has been comprehended. As learning progresses, the structural interrelationships that inhere between the components of the task become progressively more important, educationally speaking.

Factual and structural aspects of learning tend to be interrelated in an inverse fashion. If one focuses on detail, then the structure is likely to be missed, but if one focuses on structure, then not only will the structure be

more likely to be learned but also one may retain some detail (it has a 'home'). This increasing structural complexity in relation to factual retention suggests that one can refer to a Structure–Fact, or S–F, ratio.

A low S–F ratio indicates a learning outcome where correct reproduction of facts is paramount. A high S–F ratio indicates a learning outcome where understanding the structural integrity of the whole has been evidenced. (S–F ratio may also be used to describe the task set as well as the learning outcome.)

2 *Affective Involvement*

The second major dimension of performance is affective, which may be positive or negative. Positive affect occurs in intrinsic motivation or experienced satisfaction and liking for the task. Strong negative affect may occur when students have to tackle a high S–F ratio task that is quite beyond their capabilities. Boredom is more likely when they are required to rote learn material of a low S–F ratio. In general, positive outcomes occur when the S–F ratio of the task set is balanced with that which the student can handle.

Metalearning

Metalearning refers to *students' awareness of and control over their own learning processes*. In a normal learning situation, the student can be aware of two kinds of things: of the content to be learned (what the learning task is about), and of the fact that he or she is doing this act of learning and is going about it in this way and not that. This second kind of awareness is more sophisticated, and many learners do not experience it at all. It includes awareness of one's *motives* or intentions ('What do I want to get out of this?'), of *what the task requires* and whether one can meet those requirements ('This needs knowledge about *X*, and I don't know enough about that yet, so I'd better find out some more ...'), of *the strategies to be used* once the task is confronted ('I'm going to need a clear two hours if I'm to get all these notes together and see how all those points interrelate ...'), and overall of *how well* one is doing ('I didn't quite understand that. I'd better go over it again').

Students show lack of metalearning capability when they choose strategies that are incongruent with their motives, such as rote learning (surface strategy) to satisfy intrinsic curiosity (deep motive), or simply when they plug on with their learning in a particular way, regardless of evident lack of success.

A General Model of Student Learning

These points are combined in the following model.

Figure 1 conveys the relationship between personal and situational factors to approaches to learning, and between the latter and performance. A deep approach is more influenced by such factors as personal experience, and internal locus of control, while a surface approach is more tied to situational

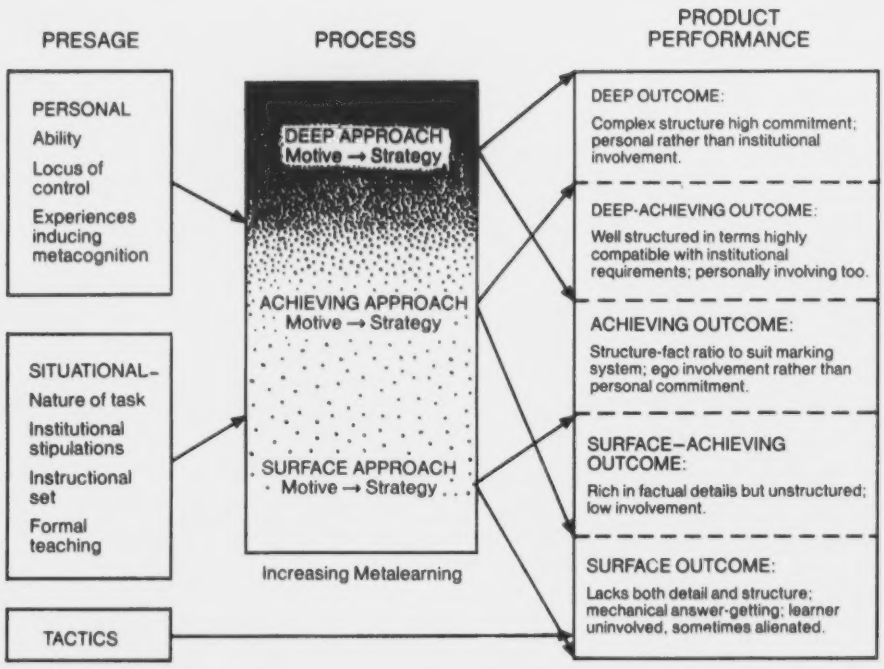

Fig. 1 General model of student learning

factors (it is easier to induce students to adopt a surface approach by applying situational pressure). Achievement falls between the two and closer to deep.

The arrows to performance indicate ranges of S–F ratio and of affective involvement that are determined by the three approaches. Overlap occurs between deep and achieving (deep-achieving) and lower down, between surface and achieving.

Metalearning capability is represented as increasing vertically. The surface approach is low on metalearning: the thought of questioning why one rote learns the task is not an issue. Even the achieving approach may sometimes be adopted with little metalearning: 'Yes, well, I suppose I'd better schedule an hour a night for history. Read, underline, take notes, keep everything tidy, type of thing . . .'. The significance of these activities is not merely that one *does* them, but that one is aware of *why* one does them.

The awareness of 'why'—evidence of metalearning—is most likely in the deep and deep-achieving approaches. 'If I am to understand this properly, then I must . . .', adding in the case of the deep-achiever, 'and it will help, knowing me, to make sure I've got enough time to cover everything, keep my notes in order, underline the concepts that are the key to understanding the passage . . .'.

The S–F ratio refers to that realized in performance, not that in the task set. If a low level outcome results from a high level task, the student is not

handling the task appropriately (not using a deep enough approach). Sometimes, paradoxically, a higher level outcome may be obtained by setting a lower level task in the first place, because it may now be closer to the student's typical way of handling the task, and therefore be closer to his or her capabilities.

The descriptions at the extreme right of Figure 1 are thus meant to be understood as *relative to the student*. At the top are those tasks that have been processed with maximal care for their complexity and meaning, and that have kept the student involved. At the bottom are tasks that were learned skimpily for surface detail and were found to be disagreeable.

Research performed in Australia and elsewhere makes it clear that approaches to learning have important effects on student progress. Work with the LPQ has specifically demonstrated that approaches to learning may be crucial in determining quality of learning, formal examination results, student satisfaction and morale, and what plans the student has for further schooling.

How do Students Develop Different Approaches to Learning?

As approaches to learning are so influential on the current and future quality of a student's education, it is important to ask how these approaches develop.

The broad answer lies in the presage factors shown in Figure 1.

Personal

Age In general, deep and achieving approaches keep increasing until well beyond 40 years of age, while surface decreases. These results are attributable either to developmental increases in cognitive sophistication and complexity, or to the evolution of strategies for handling an increasingly complex environment, or more likely, to both factors.

One disturbing exception to this general trend is that boys in Australian secondary schools decrease in deep and achieving approaches from Year 9 to Year 11, but the same is not true of girls. The precise reasons for this effect have however yet to be established, but it is noteworthy that a similar effect occurs at tertiary level with respect to both sexes.

Experiental A student's use of deep and achieving approaches is positively related to the extent of education received by either or both parents; the less parental education, the more likely it is that the student will use a surface approach.

Students for whom English is a second language obtained higher deep and achieving motives and strategies than did native English speakers, even though their achievement was below average. It is likely that the experience of continually monitoring the meaning of what one hears and says is a useful background to the later development of metalearning capability.

Personality Factors Children can be made aware of their thought processes in specific tasks in middle to late primary school, but awareness and control

over one's general learning processes does not appear to develop until around 14 years of age. This awareness occurs much more easily in students with an internal locus of control. For example, it was found in one study that a deep approach in internally (but not externally) controlled students of lower ability was related to an increase of 48 marks in the HSC aggregate (bringing them within 10 or so marks of students above average in intelligence). This study is discussed in more detail under 'validity', below.

Situational

Stress Many situational factors increase perceived stress—time limits, stipulations as to procedure, compulsion, etc.—which in turn encourages a surface approach and inhibits a deep approach.

Training Two independent studies at university (Biggs and Rihn, 1984) and in secondary school (Edwards, in progress) have shown that (a) students can be trained to improve deep and achieving approaches, and (b) such improvement is related to boosted examination performance. The Edwards study was conducted in a regular Year 11 classroom by a school counsellor using the Study Habits Evaluation and Instruction Kit (SHEIK) (Jackson, Reid, and Croft, 1981)* over seven weekly periods of instruction. Deep-achieving scores on the LPQ were higher after instruction and over 12 months later, HSC results were higher in the training group than those of an otherwise comparable control group of students.

In all the research mentioned here, the LPQ (or SPQ for tertiary students) was used to measure students' approaches to learning. The scale and subscale scores are clearly associated with desirable educational outcomes. The teacher or counsellor has control over some determinants of a student's approach, and little or none over others; in either event, the LPQ scores of a particular student, or group of students, are helpful for improving professional decision making.

* Obtainable from ACER.

Administering and Scoring the LPQ

How to Administer the LPQ

The instructions for administration are printed on the form, and may be read by the student group or individual administrators. The administrator need only introduce the student to the LPQ with a few general words about why the student is completing the instrument: for example, 'You probably need some help with your approach to your studies. I have some questions here that will help find out if you do need help, and what sort of help, so answer as honestly as you can'. And when the form is given out: 'Now, read the instructions through and let me know if there is anything you don't understand'. Any questions about the meaning of an item should be dealt with as non-directively as possible; that is, the meaning of the item should be explained without suggesting to students how they 'should' respond. The reading level of the LPQ instructions and items is about Year 6 level.

Each item is a self-report statement of a motive or a strategy. The respondents rate themselves on the statement on a 5-point scale, from 5 ('This item is *always* or *almost always* true of me') to 1 ('This item is *never* or *only*

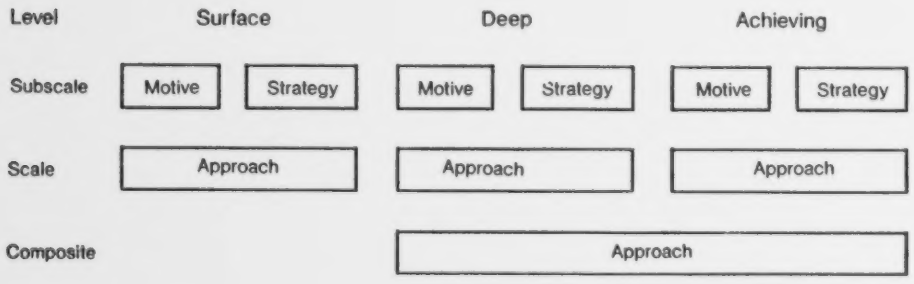

Fig. 2 Composition of LPQ and SPQ scale and subscale scores

rarely true of me'). The LPQ has been designed for use with a separate answer sheet, which contains instructions about how responses should be shown. When administering the LPQ you may need to check that the students understand how to use the answer sheet. (Please check the section on scoring for important information before you administer the questionnaire.)

How to Score the LPQ

All items are scored in the same direction, as trials with the LPQ indicated that reversing the scores for some items was a considerable disadvantage when hand scoring and did not increase reliability. The items are cycled so that every sixth item returns to the particular subscale in the order, from the first item: Surface Motive (SM), Deep Motive (DM), Achieving Motive (AM), Surface Strategy (SS), Deep Strategy (DS) and Achieving Strategy (AS). For convenience, motive and strategy scores are referred to as *subscale* scores, and approach scores as *scale* scores. Figure 2 outlines the relationships between scales and subscales.

The LPQ may be scored in the following ways:

- *By hand.* Hand scoring involves adding every sixth response in the order indicated. An overlay is available to facilitate this. Scale scores are obtained by adding the appropriate subscale scores.
- *By machine.* Responses may be punched on to cards or entered directly into a computer for scoring locally. Alternatively, answer sheets may be sent to ACER for processing by the optical mark reader and scoring service. **If you wish to use this service, the students must complete the name grid for scanning, and all information must be marked on the sheets with HB or B pencils** (no biro, felt pen, or other type of pencil can be reliably scanned).
- *By sending to ACER.*
- *By computer.*

The range of scores for any one of the motive and strategy subscales is from 6 to 30. In considering an individual's scores, it is most useful to know how *typical* those scores are for that student's age or sex. The tables of norms given at the back of this manual provide that type of information. Information on sampling is given in the next section.

Interpreting the Scores

The user will see from the tables of norms that LPQ results are given in deciles. Scores in this form assist the user to judge how typical a student's score is in broad terms: average, below average, above average. A five-way grouping is suggested to interpret the deciles.

1 would be 'well below average', in that the score is included in the bottom 10 per cent of the population.

2 or 3 would be 'below average', as the score falls within the 11th and 30th per cent of the population.

4, 5, 6 or 7, would be within the 'average' range, that is, within the middle 31 to 70 per cent of the population.

8 or 9 would be 'above average', in that 71 to 90 per cent of the population would score lower than this.

10 would be 'well above average', with over 90 per cent of all other scores lower than this.

These relationships are given in Figure 3.

When a student's scores have been scaled, or the mean scores for a class or other group of students have been calculated, what action should be taken on the basis of the results? That question is the important one, of course, and is examined in the next section.

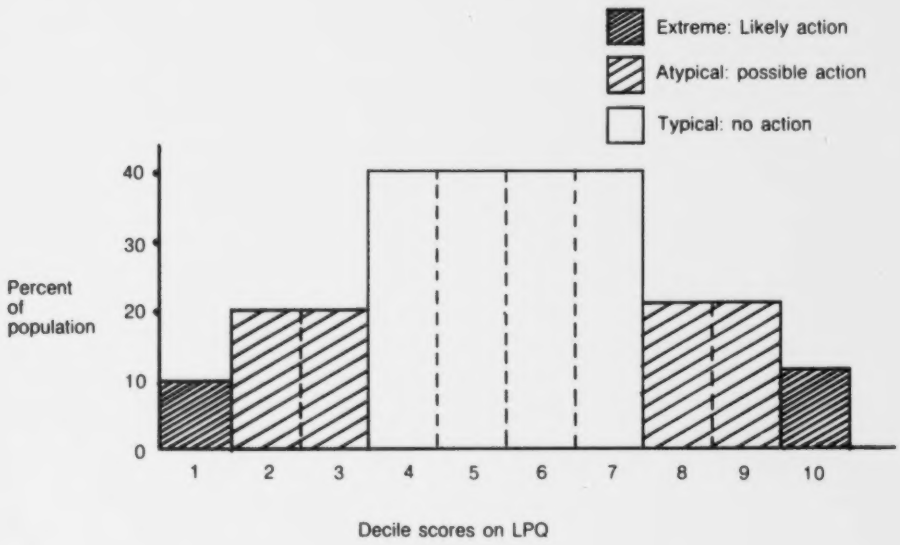

Fig. 3 Decile scores on LPQ, extent of deviation from population norm, and need for action

Using the LPQ in the Classroom

Teaching

For teachers, two main uses of LPQ scores may be distinguished: for making *instructional* decisions, and for making *referral* decisions. For both types of decision, it is helpful to consider LPQ *profiles* of subscale scores, and because the motive and strategy subscales intercorrelate, there are relatively few such profiles. A student's profile represents the general orientation towards learning, or learning style, that is typical of that individual.

Before considering some of the more common profiles, it would be convenient to introduce a shorthand. The subscales are always given in the following order: Surface motive and strategy, Deep motive and strategy, and Achieving motive and strategy. We might designate 'above average' (deciles say of 8, 9, 10) as '+', 'average' (deciles of 4 to 7) as '0', and 'below average' (deciles of 1 to 3) as '−'. It should be noted that these deciles are arbitrary.* How this works might best be seen in Table 2, which translates deciles into profiles using these suggested ranges.

Thus, a deep-achieving profile would read '00 ++ ++', and so on. It may be useful to see this depicted graphically, as shown below.

Surface motive	Surface strategy	Deep motive	Deep strategy	Achieving motive	Achieving strategy
Average	Average	Above average	Above average	Above average	Above average
0	0	+	+	+	+

* If one decided to be more stringent, one could restrict '+' and '−' to deciles of 10 and 1 respectively; or 10, 9 and 2, 1, respectively. These matters require further research; and the whole question of which profiles are the most common, or which are more demanding of action, are ones that need a substantial data bank accumulated over years. It is hoped that users of the LPQ Scoring Service at ACER will agree to their profile data (rendered anonymous) being incorporated into such a bank. The present recommendations are based mainly on research conducted with the norming sample, which in the rarer profiles might not amount to many cases.

Table 2 Deriving profiles from subscale scores

	Subscale score (deciles)							
	Surface		Deep		Achieving		Profile	
	M	S	M	S	M	S	Symbol	Name
1	10	9	5	6	6	4	++ 00 00	Surface (predominant)
	10	10	1	2	1	1	++ −− −−	Surface (exclusive)
2	5	5	10	10	5	5	00 ++ 00	Deep (predominant)
	2	1	9	10	2	2	−− ++ −−	Deep (exclusive)
3	6	4	2	1	9	10	00 00 ++	Achieving (predominant)
	1	2	2	1	9	10	−− −− ++	Achieving (exclusive)

The exact range of deciles that qualify for '+', '0', or '−' might vary according to context, or to the use to which the profile is put. A 'high cost' decision (for example, removing a student from a particular class) would require a more stringent definition of the profile than a 'low cost' decision (for example, recommending that the student visit the school counsellor).

Six of the more common profiles are discussed below.

Deep (00 ++ 00 *or* −− ++ −−). Deep predominant students in general do well academically, if not quite as well as deep-achieving. A deep exclusive (−− ++ −−) approach may not be as good for attainment as deep predominant (00 ++ 00), because students using the former define their own goals and pursue them their own way: if these happen not to be institutional goals, the student will in a *formal* sense appear to be doing badly, no matter how satisfactory learning might be from the individual's perspective. Deep students want to follow their own academic interests, relate to their own previous experience, generate their own examples, and to follow up their own leads. As far as possible, they are best left alone. If teachers become too directive, these students may drop out, either in fact, or if the 'official' goals are not rejected outright, they may be sought with a surface approach, effectively 'dropping out' in practice. Such students would do best to incorporate elements of the achieving approach. This is relatively easy if the student is sufficiently interested in the area to want to study it at a higher level, for example at university, because a good aggregate is a necessary prerequisite. Often it will be that kind of long-term planning that will make the deep exclusive student amenable to suggestions as to how to organize carrying out the task and to work more efficiently.

2 *Achieving* (00 00 ++ *or* −− −− ++). These students are mainly interested in getting good marks. They are deliberate, careful in planning, and ambitious. These students have a high academic self concept, and perform well in formal examinations.

The teaching context in the traditional selective secondary schools—emphasizing prizes, scholarships, competition, highly syllabus-oriented coaching,

norm-referenced evaluation, scheduled study times, organized note-taking, exam question practice, etc.—is made for these students. The obverse of the coin is that those features create undesirable pressure on other students, particularly those low on the achieving motive and predisposed to a surface approach. Learning by the achieving approach might sometimes be described as 'opportunistic'; for example, refusing to discuss an assignment with friends for fear of giving something away. Another sort of problem occurs when extreme achievers over-work in their relentless slog for high marks, but such cases should be referred to the counsellor (see below).

3 *Deep-Achieving* (00 ++ ++ *or* −− ++ ++). The virtues of (1) and (2) come together in the deep-achieving approach, combining an interested search for meaning and personal relevance with a carefully organized and syllabus-oriented strategy to achieve high marks in the subjects concerned. The result is usually associated with high performance, and these students usually present few problems.

If a deep-achieving student is *not* doing well, there are likely to be quite specific reasons; a common one is a language problem. As noted, the experience of second language learning may encourage metalearning, and the characteristics of deep-achieving, but if second language learning is not very secure, then achievement assessed in that language cannot be expected to be good: thus, a 'good' approach may be associated with poor performance. The ESL teacher, or the counsellor, is the appropriate resource.

4 *Surface-Achieving* (++ 00 +−). This profile belongs to students who want to achieve, but they adopt a surface approach to do so, and usually they are unsuccessful. The fact that they *want* to do well is however in their favour. The teacher might encourage them to adopt the achieving strategy—organize their approach, manage their time properly, keep good notes, etc.—and discourage rote learning. These are good candidates for guidance in study skills, such as the SHEIK program. This point is taken up in the next section.

5 *Surface* (++ 00 00 *or* ++ −− −−). Students showing either a surface predominant or a surface exclusive profile tend to have a poor academic self-concept. They underestimate their own performance relative to peers and are dissatisfied with their performance; they perform poorly on objective criteria and plan to drop out of school prematurely. They may do well under circumstances where rote learning is appropriate, but at the expense of structural complexity.

The surface approach is encouraged by pressure resulting from anxiety over examinations, meeting deadlines, fulfilling rigid institutional requirements, surveillance, and so on. The teacher's role is not to carry out therapy but to alleviate these sources of stress, or possibly to adapt the task to suit, if the S–F ratio is simply too high for that particular student.

High surface students are usually not very competent metalearners. They frequently have little insight into the 'how' and 'why' of their learning activities. Some may be trained to be more self-aware, but if not, the teacher may have little

choice but to teach task specific 'tricks' in a high structure situation, so that the student can at least get by.

Mastery learning strategy (Block, 1971) is one example of an approach that seems well suited to the surface learners; the context and task objectives are highly structured for the student, and the high success rate is specifically aimed to improve the student's academic self-concept (Bloom, *op. cit.*).

6 *Low-Achieving* (00 00 −0 *or* +0 00 −0). There are many variations in the low-achieving pattern, but the common feature is *low achievement motivation.* When this is combined with high surface motive, the students' motive to avoid failure (SM) is stronger than their need to achieve success (AM), a combination (»0 00 −0) defining the group called 'low need-achievers'. These students are not necessarily of low intelligence, but are highly defensive when their competence is being publicly evaluated, especially in a competitive situation: their greatest fear is the loss of face resulting from failure. Consequently these students are skilled task avoiders, which they do by 'forgetting' crucial assignments, setting impossibly high or trivially low goals (either way, they are off the hook), even psychosomatic illness.

The under-achieving syndrome has its roots in the personality, and its effective treatment is undoubtedly a matter for the counsellor. Nevertheless, there is a lot the teacher can do, or perhaps more importantly, there are several things the teacher can avoid doing, to make school a more productive experience than it usually is for these students. One important step would be to avoid norm-referenced testing, with the public display of rank orders of competence. Evaluation should be criterion-referenced, with the comparison being with how that student performed previously, not as compared to peers. Mastery learning, which concentrates on a high success rate on basic skills, is particularly appropriate to improve the self-concept of such students. It is also important that the teacher encourage the student to attribute *success* to his or her own *ability* (hence encouraging an optimistic prognosis) but when *failure* does occur, it should be attributed to *lack of effort* (which the student can do something about). Usually, low achieving students make the worst attributions, blaming themselves for failure, and attributing success to luck.

The above six profiles are those most likely to be met in the classroom. The descriptions convey the nature of each learning profile, and how they might most effectively be handled by the teacher, either directly or by referring elsewhere, usually to the school counsellor. These points are summarized in Table 3.

It is emphasized that these recommendations should be strengthened with further research. With increasing use of the LPQ, data will accumulate on these and other profiles, and our existing knowledge in this growing area will be expanded.*

* Users of the LPQ are encouraged to communicate with the author about any interesting profiles they encounter in their professional use of the instrument. All such communications will be treated in confidence, and should be addressed to: Professor J.B. Biggs, Department of Education, University of Newcastle.

Table 3 Teaching decisions and some LPQ Profiles

Student profile		Type of decision: Instructional treatment	Type of decision: Referral
1	Deep 00 ++ 00 −− ++ −−	Low structure; independent study, but may need guidance towards institutional curriculum goals, or into deep-achieving to best pursue interests.	Possibly not, except if help needed to promote deep-achieving.
2	Achieving 00 00 ++ −− −− ++	High structure: emphasize competition, exam-technique, but try to lead towards deep-achieving to avoid opportunism.	Probably not necessary.
3	Deep-Achieving 00 ++ ++ −− ++ ++	No further action where achievement high, but if low, suspect ESL, or poor academic self-concept.	To ESL teacher if appropriate, or to counsellor for confidence-building.
4	Surface-Achieving ++ 00 +− ++ −− +−	Focus on organizing skills and time management (AS), discourage rote learning (SS).	To counsellor; better able to tackle student study strategies directly.
5	Surface ++ 00 00 ++ −− −−	High structure: clearly specified objectives, tasks; emphasize organisation, algorithms. Avoid competition, norm-referencing, use mastery testing.	To counsellor, to train from SS to AS, as in (4); improve motivation.
6	Low-Achieving 00 00 −0 +− −− −− etc.	Criterion-referenced/mastery testing; avoid competition, stress. Attribute success to ability, failure to insufficient effort.	To counsellor: a variety of low- and under-achieving possibilities here.

The emphasis here is on the teacher's comparatively informal interaction with students. As knowledge grows, and as teachers themselves conduct research and development, one might move more towards *formal structuring* of the classroom according to predominant learning profiles. Full consideration of the possibilities in this direction would however take more space than is available here, and the reader is referred to *Student Approaches to Learning and Studying* (see especially Chapter 7).

Counselling

The notion of helping students to become aware of their own learning processes is not a new one in counselling procedures. What the LPQ does is to help counsellors obtain a quick assessment of a students' predominant motives and strategies for learning, and to indicate how typical that student is for his or her age. As mentioned in the previous section, there are relatively few basic profiles, so it would be helpful to discuss these again this time from the counsellor's point of view (it is assumed that the section above on *Teaching* will have been read):

1 *Deep* (00 ++ 00). Students with a deep profile are unlikely to be of concern to the counsellor unless they are too extreme. In that case, some general counselling on career or personal development lines might be appropriate. Deep students particularly interested in academic subjects might be encouraged to organize their approach to their favourite subject so that they can pursue it at a higher level. A kit such as SHEIK (Jackson, Reid, and Croft, 1981) might be a helpful resource in this, particularly as it may be self-administered.

2 *Achieving* (00 00 ++). This group is also unlikely to give rise to too much cause for concern over their approach to learning as such, but there may be secondary difficulties. One possible source of difficulty is the 'opportunism' referred to earlier. Another kind of difficulty arises when extreme achievers work too hard in their drive for top marks, thus creating physical or social problems for themselves; for example, by studying for the HSC until midnight, every night of the week, throughout the year.

In counselling students for these secondary problems, it would be worthwhile trying to convince them that exclusive concern with the formal trappings of excellence is counter-productive: the evidence actually favours deep-achieving over an exclusively achieving approach. Deep-achieving students are in fact likely to do better with a more relaxed approach that allows them the luxury of ranging beyond the confines of the syllabus itself.

3 *Deep-Achieving* (00 ++ ++). If students with this profile are performing badly, or feel that they are, there are two main possibilities. The first is an ESL background, in which case the appropriate referral would be to an ESL teacher. The approach to learning is fine; it is just that a major tool of learning, language, has not been mastered adequately. The second possibility is that the learner *thinks* that a major tool for learning ('study skills', 'essay-writing ability', etc.) has not been mastered. This belief is particularly likely to occur in mature-age students, and while their reasons for so thinking are understandable, it is in fact the case that many of them have better approaches to learning than their younger colleagues. The problem is not one of approach to learning, as they might think, but rather one of lack of self-confidence in what is perceived to be an ego-threatening and highly competitive situation. Such a confidence crisis might well be alleviated by a

course on study skills (such as SHEIK) or on essay-writing, not because such courses are necessary *per se*, but because they may allay anxiety.

4 *Surface-Achieving* (++ 00 +−). The problem here is that organizing skills are insufficiently developed to match the high achieving motive. The task for the counsellor is thus to build up the achieving strategy, and deep motive and strategy too, if that can be done. Evidence to date suggests that appropriately taught study skills can be very effective, as in the SHEIK kit.

5 *Surface* (++ 00 00). This group differs from the previous one in that achievement motivation is not present. One target for the counsellor is to heighten achievement motivation; after that, the necessary foundation may be present to permit concentration upon the skills associated with the achieving strategy. In the absence of adequate motivation, metalearning is unlikely, and so the counsellor might best teach survival tactics that will help the student get by in the absence of self-understanding.

6 *Low Achieving* (+0 00 −0). This is probably the most common pattern encountered by counsellors, and is defined by low achieving motive, sometimes in conjunction with high surface motive. The problem has two stages.

(a) *Inducing healthier attributions.* We have seen how the instructional environment may be changed—by mastery learning, eliminating norm-referenced assessment etc.—and the counsellor may play an important facilitative role in this, in consultation with the teacher. The counsellor may play an even more important role, by inducing the student to make healthier attributions—that success when it occurs is not due to luck but to competence, and that failure is due to insufficient effort on that particular occasion, rather than to incompetence. All too frequently, the cues that such students get from themselves, their peers, and sometimes their teachers and parents, are in the opposite direction. They come to believe that failure arises from their incompetence, and such self-knowledge is not only painful but crippling as it engenders the belief that any future effort will be likewise ineffectual. Hence these students shy away from the situation giving rise to those cues: the school and school tasks. The job of the teacher and counsellor collectively is to reverse that feedback so that these students begin to feel that it is possible to succeed.

(b) *Dealing with the absence of strategies.* Unlike even the pure surface-achieving student, the low-achiever has little in the way of strategic strength. At least the student with a surface approach tackles the task by rote learning; the low need-achiever tackles the task by not engaging it at all. These students tell themselves, for example, that the task is either impossibly difficult or ridiculously easy, and so rationalize their way out of doing anything. What these students need are some techniques for engaging the task. These may at first be quite low level and task-specific, such as simple organizing techniques, or even rote learning. On the other hand, since the correlation with IQ is not very high, there will also be quite bright low-achievers who,

given interest and protection for their ego, *could* engage the task at quite a high level. Indeed, it is remarkable how many students exhibiting this kind of 'learned helplessness' (Thomas, 1979) in school, discover when they leave that it is not a fundamental threat to their being to tackle tasks in 'real life', and with that discovery display both competence and dignity in their lives.

Quite a different area of application for counsellors is in helping students with career decision making. LPQ scores are related to some aspects of career decision making (CDM) (Lokan and Biggs, 1982). The most significant results were with the deep-achieving approach, which was involved in slightly different ways at Age 14 and at Year 11.

At both Age 14 and at Year 11, three patterns of CDM were found. The first was an academically-oriented pattern, in which students saw their futures as contingent upon continued success in the education system. The second was also associated with deep-achieving, but outside the education system. In the third pattern, students intended to make their career decision by leaving school early and seeking low status jobs. Students typical of these patterns may need counselling about particular options, but basically their CDM itself is sound.

This still leaves a number of students who have not thought out their career decisions, and these students are likely to need training in CDM itself, not just specific advice about this or that job. Given these results, the LPQ may be used to identify students likely to be in need of career counselling, by selecting students who are of medium to low verbal ability, and low scoring (say 3 and below) on the deep-achieving scale. Their specific problem areas on career decision making can then be picked up on the Career Development Inventory (obtainable from ACER) to guide further counselling.

In all these aspects of counselling, it is clear that counsellor and teacher need to work closely together and to create compatible environments for their students in common. How they might best organize that is a question of policy for each institution. The present point is that the LPQ may play a role in facilitating these important and mutually reinforcing professional interactions.

The LPQ has not created a new typology of students at risk: it simply provides a quick and convenient means of collecting information relevant to existing diagnosis and remediation. If a student is not performing well, an observant and experienced teacher, or a sensitive counsellor, may quickly distinguish a disenchanted deep exclusive, an inappropriately working surface-achiever, or a low achiever, and take the action appropriate to teach. Nevertheless, a glance at an LPQ profile could provide helpful and speedy confirmation.

In particular, it may be possible to screen all classes early in Year 8 (probably no earlier than this). The actual filling in of the instrument takes only half a lesson, and if machine scoring is used, the scaled scores can be produced very quickly. The teacher or counsellor could check the patterns of 1s and 10s, or for screening purposes possibly the 1s, 2s, and 3s (low) and the

8s, 9s, and 10s (high) for the profiles described here, and appropriate action decided in consultation.

Alternatively, it may suit institutional policy better to test only on an individual basis as need arises, and in that event the micro-computer option may be more convenient. The scaled scores are available instantaneously. A more extended discussion of uses of the LPQ is given in *Student Approaches to Learning and Studying*.

Statistical Information

Sampling

The sampling for the LPQ was arranged through the Australian Council for Educational Research, who were conducting several other studies of their own which required accurate national random sampling.

Norms for two populations of students were desired, at middle and senior secondary school. The target populations were defined as:

1 'Age 14' level: all students included in the 1975 population of 10-year-old students for the Australian Studies in School Performance (ASSP) (Keeves and Bourke, 1976), and who were therefore aged 14 in 1979; and

2 'Year 11' level: all students designated as in Year 11 in Australian secondary schools as at 1 August, 1979.

Two-stage cluster sampling procedures were used, with schools being selected first, followed by students within schools at each of the target population levels. In effect the schools were sampled with probability proportional to size of their enrolment of 14-year-old students. State, Catholic and other independent schools were represented in the sample. The procedures were such that conservative error boundaries (at the 95% confidence level) were ±5% for LPQ item types. Further information on sampling can be obtained from Lokan and Ross (1982).

Reliability

Two indices of reliability are commonly reported: test–retest, and internal consistency. Test–retest reliability, which is simply the correlation between a group of individuals' scores on the same test on two separate occasions, gives an indication of the *stability* of the test scores over time. In general, a reliable test is one that gives similar, if not identical, results from occasion to occasion. In many attributes, such as a student's motives, change over time might reasonably be expected, or even welcomed.

Internal consistency, measured by the alpha coefficient, gives a different aspect of reliability, the extent to which the items in the scale 'agree' with each other that they are measuring the same thing. A low alpha (for example, less than .4) suggests that the scale in question reflects more than one underlying attributes, which is not a satisfactory situation because a score on such a scale is difficult to interpret.

Table 4 gives data on both aspects of reliability for the LPQ. The test–retest information shows reasonable stability over a period of four months in five Year 11 classes in two independent studies (Cornell, in progress; Edwards, in progress). In the Edwards study, the scores actually did change by virtue of an intervention program (they shifted significantly towards deep-achieving), yet it can still be seen that the relative ordering of the students remained similar. In general, the test–retest data are encouraging, showing reasonable stability, yet allowing for some change over time—as indeed one would expect.

The internal consistency data are likewise satisfactory, with the Surface Motive showing least consistency. This motive comprises both positive and negative aspects of extrinsic motivation—just doing enough work to pass and gain some sort of qualification and fear of failing—and that double meaning is reflected in the lower alpha coefficients.

Table 4 Reliability data for LPQ and SPQ scale score

		Test-retest		Internal consistency (alpha coefficients)					
		LPQ Year 11		LPQ			SPQ		
		(a)	(b)	Age 14	Year 11	CAE	(c)	Uni	(d)
Surface	M	.60	.70	.46	.45	.51	.55	.61	.60
	S	.49	.60	.51	.55	.62	.56	.66	.69
	A	NA	NA	.60	.60	.68	.64	.73	.75
Deep	M	.63	.60	.56	.54	.63	.64	.65	.67
	S	.52	.63	.67	.65	.73	.65	.75	.72
	A	NA	NA	.76	.73	.79	.76	.81	.79
Achieving	M	.70	.67	.68	.67	.71	.72	.72	.70
	S	.72	.68	.67	.73	.75	.73	.77	.74
	A	NA	NA	.77	.78	.77	.78	.78	.77
Surface-Achieving		NA	NA	NA	NA	.74		.77	
Deep-Achieving		NA	NA	NA	NA	.85		.85	

(a) from Cornell (1986) (N = 60; four months between testing)
(b) from Edwards (1986) (N = 69; four months between testing)
(c) the present norming samples
(d) from O'Neil and Child (1984)
(e) from Hattie and Watkins (1981)

In general these data are satisfactory. It is worth reporting here that other investigators have independently examined the tertiary version of the LPQ, the SPQ. O'Neil and Child (1984) administered the SPQ to 245 polytechnic (advanced education) students in the UK, and subjected the data to a series of factor analyses. They concluded, as may be seen in Table 4 with the LPQ, that the Surface Motive is weakest, but the other five motive and strategy scores hold up 'most favourably' (p.232).

Watkins and Hattie (1981) also investigated the reliability and internal consistency of the SPQ with 255 Australian university students and concluded:

> This investigation of the internal structure of the SPQ provided very satisfactory results from the Australian sample—adequate to good internal consistency coefficients; item analysis which supported the existence of Biggs' subscales of the SPQ; and a subscale factor analysis which supported the validity of Biggs' model of the study process domain. The SPQ can then be recommended for further use with Australian students (p.243).

The SPQ is, for purposes of determining reliability, essentially similar to the LPQ, so Watkins and Hattie's recommendation can safely be extended to the LPQ.

Validity

The validity of a test refers to the extent to which it measures the attribute it is supposed to measure. Validity may be assessed in many ways—Watkins and Hattie (see above) refer to the 'factorial' validity of the SPQ, which they found to be satisfactory. The most convincing type of validity, however, is construct validity. By this is meant that the scores relate to other measures, for example student performance, in ways that are predictable on theoretical grounds. For example, if high surface strategy scores were found to be associated with writing high quality and complex essays, one would suspect very strongly that the surface scale scores were not measuring what they are supposed to measure, which is the reproduction of factually oriented material.

A large number of findings attest to the construct validity of the LPQ, some of which have been mentioned above. For example, it has been found that students high on deep and achieving approaches plan to extend their schooling, whereas those high on surface intend to leave as soon as they can; that achieving, and especially deep, approaches increase with age and with 'intense' learning experiences such as immersion in a foreign language.

The most pertinent validity studies, however, are those involving performance.

Correlations with students' subjective estimates of their performance and of their satisfaction with their performance are consistent. 'Surface' correlates on average around −.15, 'deep' correlates positively in the low .20s, and 'achieving' in the .30s. Given the sample sizes of several hundreds, these figures are highly significant statistically.

Correlations with HSC performance, 15 months after the LPQ had been administered, are similar. 'Surface' correlates negatively, and 'achieving' positively (both around .20 to .30), while 'deep' correlates positively only in the student's

favourite subject. This last finding is in keeping with theory, as the deep approach would be expected to be deployed only in the subjects in which the students are intrinsically motivated. SPQ surface approach scores correlate with first year Science around −.40, and deep and achieving with first year Arts and Economics around .30 (Watkins and Hattie, 1981).

The quality of performance, as reflected in the structural complexity of students' open-ended responses to questions, may be assessed by the SOLO Taxonomy (Biggs and Collis, 1982). Studies relating this aspect of performance to approaches to learning have been carried out amongst secondary (Kirby and Biggs, 1981) and tertiary (Biggs, 1979) students. Deep approach was clearly implicated in complex responding by both groups; surface with low complexity of response but a corresponding high recall of factual detail; and achieving affected performance according to the student's perception of what constituted success. Perhaps even more important than these 'straight' relationships to performance, however, are interactions between individual difference variables and approach to learning. Here the interest is on whether approaches 'work' better with some people than with others.

Two analyses are of particular interest, and are depicted in Figures 4 and 5.

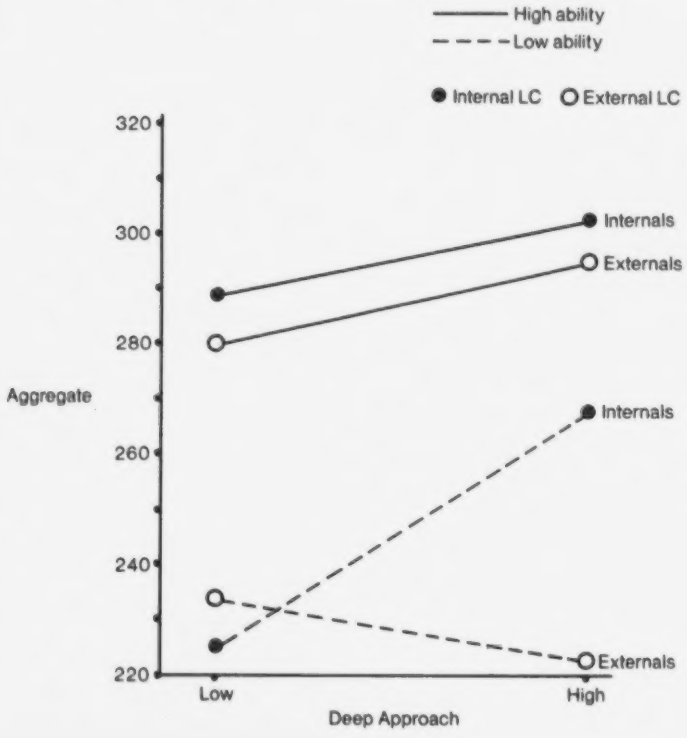

Fig. 4 Effects of Ability, Locus of Control, and Deep Approach on HSC aggregate

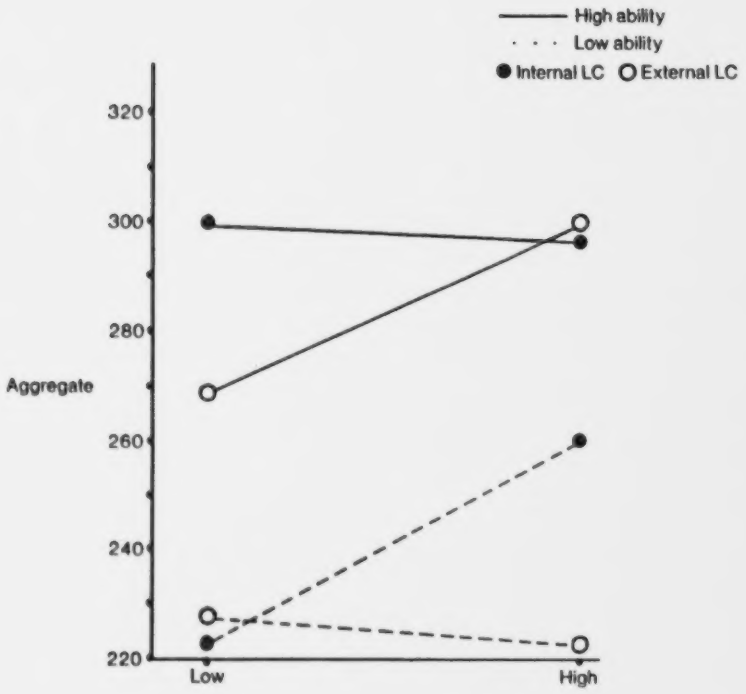

Fig. 5 Effects of Ability, Locus of Control, and Achieving Approach on HSC aggregate

Figure 4 refers to the use of the deep approach and its relation to HSC aggregate scores, with students of high and low ability and of internal and external locus of control (14 months separated the completion of the LPQ and sitting the HSC). Clearly high ability students do better than low ability, and generally, internally oriented better than externally. The deep approach increases the bright students' aggregate by about 10, whether or not they are internally or externally oriented. With low ability students ('low' is a relative term: it refers to the bottom 50 per cent in ability of those sitting for the HSC), on the other hand, internals increase their score by 45 aggregate marks, whereas externals *decrease* theirs by about 15 marks. In other words, all bright students can handle the deep approach, but low ability students need to be inward-looking in their approach; if they are not, they had better avoid the deep approach.

Figure 5 tells a slightly different story. Here, the effect of the achieving approach on HSC aggregate marks is looked at in terms of ability and locus of control. High ability internals work consistently at a high level, and independently of the achieving approach (these students probably use a deep approach). Organizing, and trying to maximize marks, however, lifts high ability externals by about 36

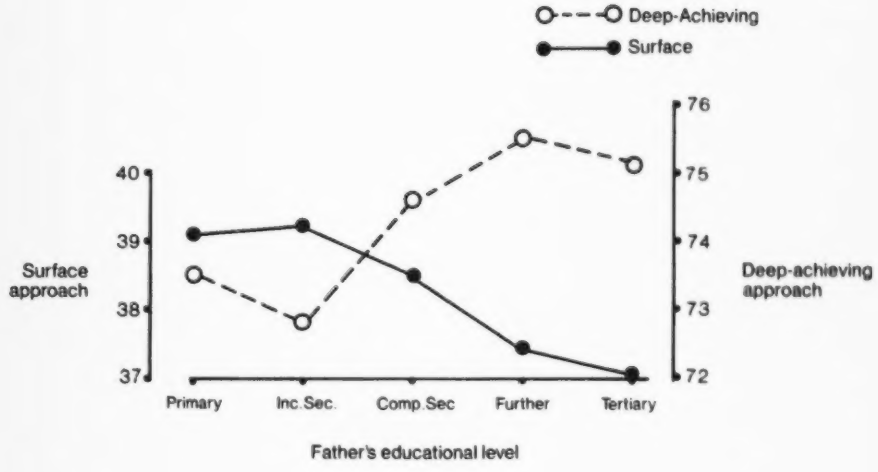

Fig. 6 Father's education and Surface and Deep-Achieving Approaches (Age 14 and Year 11 combined)

marks: clearly, this is an approach that suits them. It also suits low ability internals: they gain by around 40 marks. Low ability externals are unaffected.

The relationship between one other individual difference variable and approach to learning is of interest here. Children of fathers who have completed secondary school show an increase in the deep-, and a decrease in the surface-achieving, approach. The relationship is shown in Figure 6.

The results suggest that both cognitive and affective aspects of learning are picked up at home to some extent. In other words, the more education the father has, the more likely the child to have a 'scholastic' approach to learning: to avoid merely reproducing learning, to be motivated by curiosity and achievement, and to read widely for meaning in an organized fashion.

These patterns are quite consistent with the theory underpinning the LPQ and illustrate the fact that scale scores relate to student performance in consistent and predictable ways.

Several other studies have been carried out using the LPQ scales that attest to their validity: the reader is referred to *Student Approaches to Learning and Studying* for further details.

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Tables of Norms

Raw scores may be converted into deciles by use of the tables on the following pages. Separate tables are available for:

Table 5: Age 14 Males
Table 6: Age 14 Females
Table 7: Year 11 Males
Table 8: Year 11 Females.

Each table provides conversions for *Motives* and *Strategies* (Surface, Deep, and Achieving) and *Approaches* (Surface, Deep, Achieving, and Deep-Achieving).

To convert a raw score into its decile, the appropriate table is selected, and then the raw score is read into each Motive, Strategy, or Approach column, and the decile read off in the column 'Decile Scaled Score' on the left of the table.

Example. A 15-year-old Year 9 girl obtains the raw scores as outlined in the table below (see row, 'Raw Scores'). By entering Table 6 (Age 14 is closer to a 15-year-old Year 9 than the Year 11 Tables) the deciles can be read off. The correct deciles have been entered into the table. Check that you agree with those entered.

	Surface		Deep		Achieving		Surface	Deep	Achieving	Deep-Achieving
	M	S	M	S	M	S	Approach	Approach	Approach	Approach
Raw score	24	23	10	12	23	23	47	22	46	68
Decile	8	10	1	2	8	9	10	1	9	4

This girl, of course, has a clear ++ −− ++, or surface-achieving profile: she wants to get on, and approaches her work in a systematic and organized way, but her strategies for handling it are based on reproduction and rote learning. Maybe she should see the counsellor if, as is likely, she is not achieving as well as she wants to.

Table 5 Norms for LPQ scales and subscales: Age 14 males (N = 653)

Percentile range	Decile scaled score	Motives and strategies					
		Surface		Deep		Achieving	
		M	S	M	S	M	S
91–100	10	27+	24+	26+	23+	27+	24+
81–90	9	25–26	22–23	24–25	21–22	26	22–23
71–80	8	24	21	22–23	20	24–25	20–21
61–70	7	23	20	21	19	23	19
51–60	6	22	19	20	18	22	18
41–50	5	21	18	19	16–17	20–21	17
31–40	4	20	17	18	15	19	15–16
21–30	3	19	15–16	17	14	17–18	14
11–20	2	17–18	13–14	15–16	12–13	15–16	12–13
1–10	1	0–16	0–12	0–14	0–11	0–14	0–11
Mean		21.48	18.29	19.71	17.21	20.82	17.31
SD		3.81	4.07	4.07	4.26	4.57	4.53

Percentile range	Decile scaled score	Approaches			
		Surface	Deep	Achieving	Deep-Achieving
91–100	10	48+	47+	48+	92+
81–90	9	46–47	44–46	45–47	87–91
71–80	8	44–45	41–43	43–44	83–86
61–70	7	42–43	39–40	41–42	80–82
51–60	6	40–41	37–38	39–40	76–79
41–50	5	39	35–36	37–38	72–75
31–40	4	37–38	33–34	35–36	68–71
21–30	3	35–36	31–32	32–34	64–67
11–20	2	32–34	28–30	28–31	58–63
1–10	1	0–31	0–27	0–27	0–57
Mean		39.77	36.92	38.13	75.05
SD		6.36	7.33	7.67	13.34

Table 6 Norms for LPQ scales and subscales: Age 14 females (N = 713)

Percentile range	Decile scaled score	Motives and strategies					
		Surface		Deep		Achieving	
		M	S	M	S	M	S
91–100	10	27+	23+	25+	23+	26+	25+
81–90	9	25–26	21–22	23–24	21–22	24–25	23–24
71–80	8	24	20	22	22	23	21–22
61–70	7	23	19	21	18–19	22	20
51–60	6	22	17–18	20	17	21	19
41–50	5	21	16	19	16	19–20	17–18
31–40	4	20	15	18	15	18	16
21–30	3	19	14	17	14	16–17	14–15
11–20	2	17–18	12–13	15–16	11–13	14–15	12–13
1–10	1	0–16	0–11	0–14	0–10	0–13	0–11
Mean		21.42	17.08	19.42	16.73	19.66	18.02
SD		3.89	4.16	4.03	4.37	4.64	4.74

Percentile range	Decile scaled score	Approaches			
		Surface	Deep	Achieving	Deep-Achieving
91–100	10	47+	46+	48+	92+
81–90	9	45–46	43–45	45–47	87–91
71–80	8	42–44	41–44	43–44	82–86
61–70	7	40–41	39–40	41–42	78–81
51–60	6	39	37–38	39–40	75–77
41–50	5	37–38	35–36	36–38	71–74
31–40	4	35–36	33–34	34–35	68–70
21–30	3	34	30–32	31–33	63–67
11–20	2	31–33	27–29	28–30	55–62
1–10	1	0–30	0–26	0–27	0–54
Mean		38.50	36.15	37.68	73.83
SD		6.49	7.54	8.16	14.30

Table 7 Norms for LPQ scales and subscales: Year 11 males (N = 464)

Percentile range	Decile scaled score	Motives and strategies					
		Surface		Deep		Achieving	
		M	S	M	S	M	S
91–100	10	26+	23+	25+	23+	26+	23+
81–90	9	25	21–22	23–24	21–22	24–25	21–22
71–80	8	24	20	21–22	19–20	23	19–20
61–70	7	23	19	20	18	22	18
51–60	6	22	18	19	17	21	17
41–50	5	21	17	18	16	20	15–16
31–40	4	20	16	17	15	18–19	14
21–30	3	18–19	14–15	15–16	14	16–17	13
11–20	2	16–17	12–13	14	12–13	14–15	11–12
1–10	1	0–15	0–11	0–13	0–11	0–13	0–10
Mean		21.06	17.18	18.70	16.88	19.84	16.17
SD		3.93	4.10	4.12	4.05	4.67	4.52

Percentile range	Decile scaled score	Approaches			
		Surface	Deep	Achieving	Deep-Achieving
91–100	10	47+	45+	47+	89+
81–90	9	44–46	41–44	44–46	82–88
71–80	8	42–43	39–40	41–43	78–81
61–70	7	40–41	38	39–40	76–77
51–60	6	38–39	36–37	37–38	73–75
41–50	5	37	35	35–36	70–72
31–40	4	36	32–34	32–34	65–69
21–30	3	34–35	30–31	30–31	61–64
11–20	2	30–33	26–29	26–29	55–60
1–10	1	0–29	0–25	0–25	0–54
Mean		38.24	35.58	36.00	71.58
SD		6.49	7.10	7.85	12.87

Table 8 Norms for LPQ scales and subscales: Year 11 females (N = 521)

Percentile range	Decile scaled score	Motives and strategies					
		Surface		Deep		Achieving	
		M	S	M	S	M	S
91–100	10	27+	23+	25+	23+	25+	25+
81–90	9	25–26	21–22	23–24	21–22	23–24	23–24
71–80	8	24	19–20	22	20	22	21–22
61–70	7	23	18	21	19	21	20
51–60	6	22	17	20	18	20	18–19
41–50	5	21	15–16	19	17	19	17
31–40	4	20	14	18	16	17–18	16
21–30	3	18–19	13	17	15	15–16	14–15
11–20	2	17	12	15–16	13–14	13–14	12–13
1–10	1	0–16	0–11	0–14	0–12	0–12	0–11
Mean		21.12	16.45	19.52	17.46	18.97	18.02
SD		3.97	4.25	3.81	4.03	4.48	4.75

Percentile range	Decile scaled score	Approaches			
		Surface	Deep	Achieving	Deep-Achieving
91–100	10	47+	46+	48+	91+
81–90	9	44–46	43–45	44–47	86–90
71–80	8	41–43	41–42	42–43	82–85
61–70	7	39–40	39–40	40–41	77–81
51–60	6	38	38	38–39	75–76
41–50	5	36–37	36–37	36–37	72–74
31–40	4	35	34–35	34–35	68–71
21–30	3	32–34	32–33	30–33	63–67
11–20	2	30–31	29–31	27–29	58–62
1–10	1	0–29	0–28	0–26	0–57
Mean		37.57	36.98	37.00	73.98
SD		6.66	6.84	7.94	13.01

LPQ

Learning Process Questionnaire

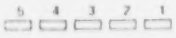
What the LPQ is About

This questionnaire contains a number of questions about your attitudes towards your studies and your usual ways of learning in school.

There is no *right* way of going about your learning. It all depends on what suits your own style and the subjects you are studying. The following questions have been carefully selected to cover most aspects your schoolwork and your answer to each question is important. If you think your answers to a question would depend on the subject being learnt, give the answer that would apply to the subject(s) most important to you.

How to Answer

For each item there is a row of boxes for a five-point scale on the Answer Sheet:



. A response is shown by marking **one** of the five boxes for an item to underline the desired number.

The numbers stand for the following responses:

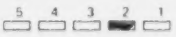
5 — this item is *always* or *almost always* true of me
4 — this item is *frequently* true of me
3 — this item is true of me about *half the time*
2 — this item is *sometimes* true of me
1 — this item is *never* or *only rarely* true of me.

Example

I study best with the radio on.

If this was almost always true of you, you would underline 5 thus:

If you only sometimes studied well with the radio on, you would underline 2, thus:



Underline the number that best fits your *first* reaction—don't spend a long time on any question, and answer every question.

Do not worry about what you think your teachers or anyone else might want you to say. Your answers are **CONFIDENTIAL**.

Thank you for your co-operation.

Learning Process Questionnaire

Underline one number for each item.

1 I chose my present subjects mainly because of career prospects when I leave school, not because I'm particularly interested in them.

2 I find that at times my school work can give me a feeling of deep personal satisfaction.

3 I try to obtain high marks in all my subjects because of the advantage this gives me in competing with others when I leave school.

4 I tend to study only what's set; I usually don't do anything extra.

5 While I am studying, I often try to think of how useful the material that I am learning would be in real life.

6 I regularly take notes from suggested readings and put them with my class notes on a topic.

7 I am put off by a poor mark on a test and worry about how I will do on the next test.

8 While I realize that others sometimes know better than I do, I feel I have to say what I think is right.

9 I have a strong desire to do best in all of my studies.

10 I find that the only way to learn many subjects is to memorize them by heart.

11 In reading new material, I am often reminded of material I already know and see the latter in a new light.

12 I try to work solidly throughout the term and revise regularly when the exams are close.

13 Whether I like it or not, I can see that studying is for me a good way to get a well-paid or secure job.

14 I find that many subjects can become very interesting once you get into them.

15 I like the results of tests to be put up publicly so I can see by how much I beat some others in the class.

16 I prefer subjects in which I have to learn just facts to ones which require a lot of reading and understanding of material.

17 I find that I have to do enough work on a topic so that I can form my own point of view before I am satisfied.

18 I always try to do all of my assignments as soon as they are given to me.

19 Even when I have studied hard for a test, I worry that I may not be able to do well on it.

20 I find that studying some topics can be really exciting.

21 I would rather be highly successful in school even though this might make me unpopular with some of my class mates.

22 In most subjects I try to work things so that I do only enough to make sure I pass, and no more.

23 I try to relate what I have learned in one subject to what I already know in other subjects.

24 Soon after a class or lab, I re-read my notes to make sure I can read them and understand them.

25 I think that teachers shouldn't expect secondary school students to work on topics that are outside the set course.

26 I feel that I might one day be able to change things in the world that I see now to be wrong.

27 I will work for top marks in a subject whether or not I like the subject.

28 I find it better to learn just the facts and details about a topic rather than try to understand all about it.

29 I find most new topics interesting and often spend extra time trying to find out more about them.

30 When a test is returned, I go over it carefully correcting all errors and trying to understand why I made the original mistakes.

31 I will continue my studies only for as long as necessary to get a good job.

32 My main aim in life is to find out what to believe in and then to act accordingly.

33 I see doing well in school as a sort of game, and I play to win.

34 I don't spend time on learning things that I know won't be asked in the exams.

35 I spend a great deal of my free time finding out more about interesting topics which have been discussed in different classes.

36 I usually try to read all the references and things my teacher says we should.

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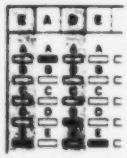
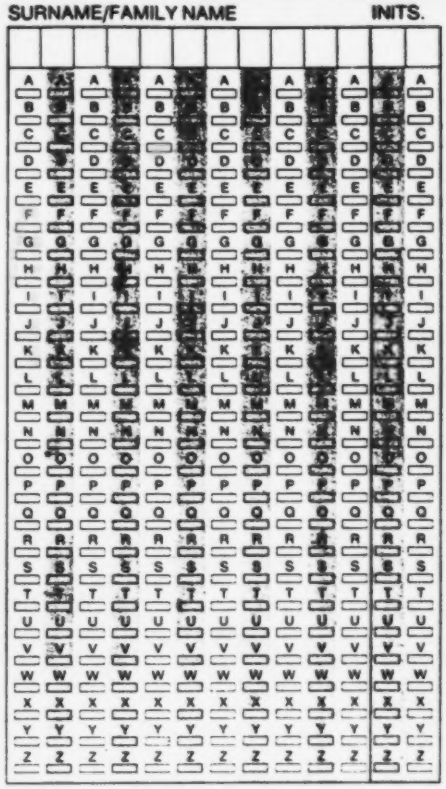
LEARNING PROCESS QUESTIONNAIRE

Print name in boxes here, — then mark box to underline appropriate letter in each column.

Example:



SURNAME/FAMILY NAME INITS.



Name: _____

School: _____

City/Town: _____

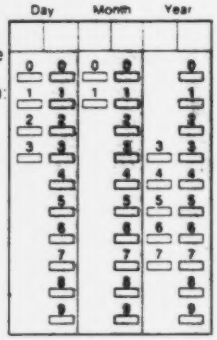
Today's date: ___/___/198 (Day / Month / Year)

Age: ____ Years ____ Months

Sex: M F

Year level: 7 8 9 10 11 12

Date of Birth: Day Month Year



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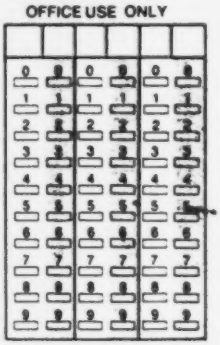
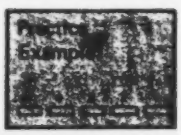


INSTRUCTIONS

Do not go over edges of boxes.
Use only HB or B pencils.
Erase mistakes fully.

KEY

5 means . . Always or almost always true of me
4 means . . Frequently true of me
3 means . . True of me about half the time
2 means . . Sometimes true of me
1 means . . Never or only rarely true of me



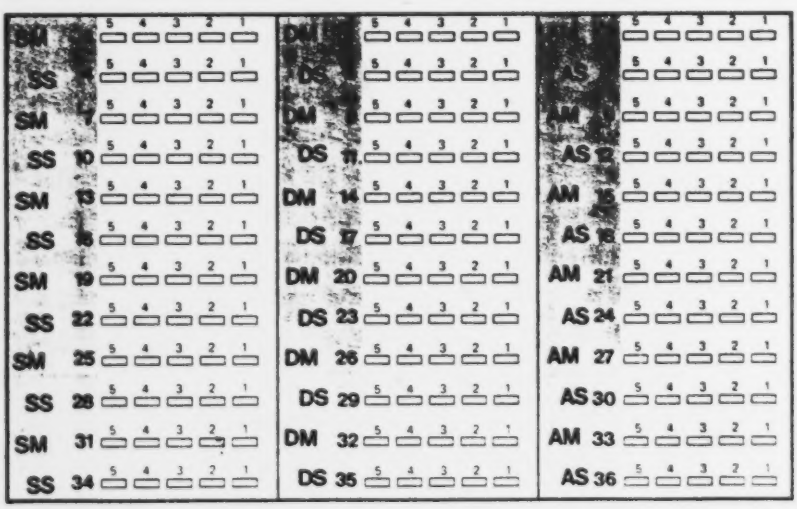
A. What is your favourite school subject?

_____
(write in)

B. Compared with most of the students in your year, how good at most of your school subjects are you?

Excellent | Above average | Average | Below average | Quite poor

N.B. Item numbers go across in groups of three.



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Dec.						

SA		DA		AA	
RS		RS		RS	
Dec.		Dec.		Dec.	

PROFILE (+/0/-)

DAA RS Dec.

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Student Approaches to Learning and Studying *formulates a theory of student learning which, together with the instruments deriving from it, has important implications for teaching practice at the secondary and tertiary level.*

The norms were established on two secondary and two tertiary large national samples. The instruments are easy and convenient to administer and score, and their interpretation and use are based on carefully researched but easy-to-grasp theory.

Student Approaches to Learning and Studying *consists of:*

- Research Monograph *which describes the investigations leading to the theory's formulation;*
- LPQ Manual *which gives data on reliability and validity and describes a 36-item* Learning Process Questionnaire *for which an* OMR Answer Sheet *and* Score Key Overlay *are available;*
- SPQ Manual *which gives data on reliability and validity and describes a 42-item* Study Process Questionnaire *for which an* OMR Answer Sheet *and* Score Key Overlay *are available.*

John Biggs is currently Professor of Education at the University of Newcastle, and Dean of the Faculty. His interest in student approaches to learning goes back to 1966, when he was Educational Research Officer at Monash University. Since then he has published some forty papers and several books relating to student learning, and has conducted workshops for secondary and tertiary teachers showing how knowledge of students' learning can improve teaching and assessment procedures.